

ABSTRACT OF THE DISCLOSURE

A method for single molecule identification of a target DNA molecule in a random coil state having the following steps: a) attaching an
5 optically distinguishable material to a DNA sequence recognition unit; b)
hybridizing the DNA sequence recognition unit to the target DNA molecule in a
random coil state to form a hybridized DNA complex in a random coil state; c)
stretching the hybridized DNA complex in a random coil state to form a
hybridized DNA complex in a substantially linear configuration; and d) detecting
10 the optically distinguishable material in a sequential manner along the
substantially linear hybridized DNA complex, thereby identifying the target DNA
molecule.

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